

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2018/2019

TBI 3131 – BUSINESS INTELLIGENCE

(All sections / Groups)

13 OCTOBER 2018
2.30 p.m. - 4.30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 pages excluding cover page with 5 Questions only.
2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the Answer Booklet provided.

QUESTION 1

- a. Define the term of “Business Intelligence” (BI). (2 marks)
- b. Briefly describe the final outcome of “Analytics”. Make **THREE (3)** short questions to summarise the final outcome. (2 marks)
- c. **Figure 1** describes an Overview of Analytics.
 Label **a, b, c** as a simple taxonomy of the three types of analytics, **Q1, Q2, Q3, Q4, Q5, Q6** as the questions for simpler descriptive language, **E1, E2, E3, E4, E5, E6** as enablers and **OUT1, OUT2, OUT3, OUT4, OUT5, OUT6** as outcomes for each of analytics in the figure. (5 marks)

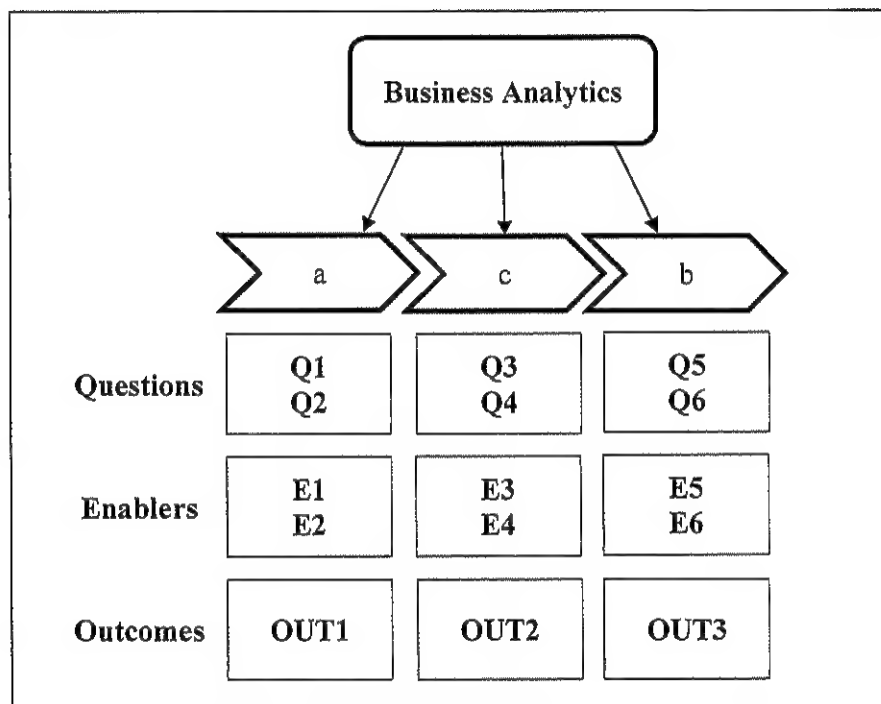


Figure 1: An Overview of Business Analytics.

Source: Sharda, R., Delen, D., Turban, E. (2014). *Business Intelligence: A Managerial Approach on Analytics* 3/e, Prentice Hall.

- d. Briefly explain the Pressures–Responses–Support model. (1 mark)

Continued

QUESTION 2

You are a management executive who is assigned to develop an effective data warehouse for the ABC Company.

- a. Which development approach would you suggest? Explain the reason of your suggestion. (2 marks)
- b. Briefly explain any **FIVE (5)** of the most important risks and issues to consider and potentially avoid. (5 marks)
- c. Identify **TWO (2)** competing performance measurement systems for ABC Company. (1 mark)
- d. Differentiate the **TWO (2)** competing performance measurement systems in Question (c). (2 marks)

QUESTION 3

- a. List and explain the **THREE (3)** major categories of business reports. (3 marks)
- b. What can you observe from Gartner's Magic Quadrant for Business Intelligence and Analytics Platforms? Explain your observations. (3 marks)
- c. What do you think about data mining and its implication for privacy? Explain what is the threshold between discovery of knowledge and infringement of privacy. (2 marks)
- d. Is cloud computing "just an old wine in a new bottle"? How is it similar to other initiatives? How is it different? (2 marks)

Continued

QUESTION 4

- a. As a business analyst, select the best business idea based on the following statistical data. (2 marks)

Business Idea	Success Rate	Gain (RM)	Loss (RM)
ABC Cafe	42	10,000	-5,000
PQR Stall	35	20,000	-7,000
XYZ Food Truck	23	30,000	-10,000

- b. Generate K-Means clustering for the following data points; assuming $k = 3$.

2, 6, 7, 8, 12, 15, 18, 28, 38

(4 marks)

- c. Explain **THREE (3)** main data mining methods and describe the fundamental differences among them? (4 marks)

QUESTION 5

Consider the following article for Discovery Health.

Discovery Health wanted to be able to predict members' health problems, in addition to improving ways to identify and combat fraud. Through advanced analytics and big data technologies, it recovered R250 (approximately USD16.74) million in fraudulent claims last year. The fraud recovery was enabled by a new accelerated analytics landscape built by Discovery Health, in partnership with BITanium, an IBM business partner.

The system enables the company to run three years' worth of data through complex statistical models to deliver actionable insights in a matter of minutes. It allows for more accurate predictors for chronic conditions, helping Discovery initiate better preventative programmes; identifies possible "phantom drug" prescriptions by mining data from pharmacies and health providers; and cuts development time for predictive models. Critically, the accelerated analytics system has significantly improved fraudulent claims recovery, and allows Discovery to control the costs of its services and ensures better healthcare for its members.

With over 2.7 million members and a million rows of new claims data being generated each day, Discovery Health has vast volumes of data in its databanks. However, analysing this data previously took days to obtain results. Its new analytics system allows for improved insights in minutes.

Continued

Matthew Zylstra, Actuary, Risk Intelligence Technical Development at Discovery Health, says: "We can now combine data from our claims system with other sources of information such as pathology results and members' questionnaires to gain more accurate insight into their current and possible future health." For example, by looking at previous hospital admissions, we can now predict which of our members are most likely to require procedures such as knee surgery or lower back surgery. By gaining a better overview of members' needs, we can adjust our health plans to serve them more effectively and offer better value."

Estiaan Steenberg, Actuary at Discovery Health, adds: "From an analytical point of view, fraud is often a small intersection between two or more very large datasets. We now have the tools we need to identify even the tiniest anomalies and trace suspicious transactions back to their sources. For example, Discovery can now compare drug prescriptions collected by pharmacies across the country with healthcare providers' records. If a prescription seems to have been issued by a provider, but the person fulfilling it has not visited that provider recently, it is a strong indicator that the prescription may be fraudulent." We used to only be able to run this kind of analysis for one pharmacy and one month at a time," says Steenberg. "Now we can run 18 months of data from all the pharmacies at once in two minutes. There is no way we could have obtained these results with our old analytics landscape."

Nadine Shenker, Director of BITanium Analytics, comments: "Working with the team at Discovery has been an incredible journey thus far. It is inspiring to see the successful culmination of two commonly discussed concepts, namely 'big data' and 'analytics'. I believe Discovery's achievements are partly due to the successful implementation of these technologies, but also due to the team's camaraderie and enthusiasm. This will enable Discovery to reach new analytical heights, and we look forward to being part of the next chapter."

The system implemented by BITanium comprises IBM SPSS Statistics, IBM SPSS Modeler, IBM SPSS Text Analytics for Surveys and IBM PureData System for Analytics (formerly IBM Netezza).

Source: Sharda, R., Delen, D., Turban, E. (2014). *Business Intelligence: A Managerial Approach on Analytics 3/e*, Prentice Hall.

- How big is "big data" for Discovery Health? (2 marks)
- List **FOUR (4)** big data sources used by Discovery Health for their analytic solutions. (2 marks)
- Explain **FOUR (4)** main data/analytics challenges Discovery Health was facing. (2 marks)
- Explain **TWO (2)** main solutions produced by Discovery Health. (2 marks)
- What were the initial results/benefits? Explain what do you think will be the future of big data analytics at Discovery Health. (2 marks)

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